

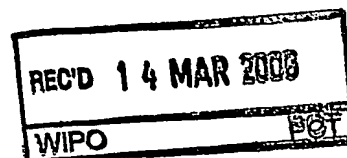
# PATENT COOPERATION TREATY



# PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference WO42906		<b>FOR FURTHER ACTION</b>		See Form PCT/PEA416
International application No. PCT/IB2004/003843		International filing date (day/month/year) 24.11.2004		Priority date (day/month/year) 25.11.2003
International Patent Classification (IPC) or national classification and IPC H01M8/02, H01M8/24				
Applicant TOYOTA JIDOSHA KABUSHIKI KAISHA et al.				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> sent to the applicant and to the International Bureau a total of sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input checked="" type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand 26.09.2005		Date of completion of this report 13.03.2006		
Name and mailing address of the International preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer Haering, C Telephone No. +49 89 2399-8010 		

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/IB2004/003843

**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on translations from the original language into the following language , ,  
which is the language of a translation furnished for the purposes of:

- ☐ international search (under Rules 12.3 and 23.1(b))  
☐ publication of the international application (under Rule 12.4)  
☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

**Description, Pages**

1-17 as originally filed

**Claims, Numbers**

1-10 as originally filed

**Drawings, Sheets**

1/9-9/9 as originally filed

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages  
☐ the claims, Nos.  
☐ the drawings, sheets/figs  
☐ the sequence listing (*specify*):  
☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages  
☐ the claims, Nos.  
☐ the drawings, sheets/figs  
☐ the sequence listing (*specify*):  
☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/IB2004/003843

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	1-10
	No: Claims	
Inventive step (IS)	Yes: Claims	1-10
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-10
	No: Claims	

2. Citations and explanations (Rule 70.7):

**see separate sheet**

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**Box No. VII Certain defects in the international application**

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The following defects in the form or contents of the international application have been noted:

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

PCT/IB2004/003843

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

Reference is made to the following documents:

- D1: WO 02/15311 A (BASF AKTIENGESellschaft; FISCHER, KLAUS;  
BARTHOLOMEYZIK, WILLI) 21 February 2002 (2002-02-21)  
D2: WO 01/80339 A (NEDSTACK HOLDING B.V; MIDDELMAN, ERIK; VAN DER ZIJDEN,  
ARTHUR) 25 October 2001 (2001-10-25)  
D3: EP-A-0 951 086 (MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD) 20 October 1999  
(1999-10-20)  
D4: US-B1-6 638 657 (CISAR ALAN ET AL) 28 October 2003 (2003-10-28)  
D5: US-A-5 527 634 (MEACHAM ET AL) 18 June 1996 (1996-06-18)  
D6: EP-A-1 489 675 (LYNNTECH, INC) 22 December 2004 (2004-12-22)

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- 1.1. Document D1 discloses (see passages cited in the search report) a separator comprising an internal metal layer and two non-conducting plastic layers, arranged on both sides of and surrounding the metal layer and forming the surfaces of the bipolar plate.
  - 1.2. Document D2 discloses gold plated stainless steel bipolar plates welded together on the edge with an elastomer gasket. The passageways or open portions are in the gasket, not the separator.
  - 1.3. Document D3 discloses (see column 14, lines 38-57; fig. 5) a module of cells wherein a phenolic resin either coats the flanks of said module of cells or coats the interior surfaces of the manifold.
  - 1.4. Document D4 discloses (see c.9, l.51-55 and fig. 17) gold plated stainless steel bipolar plates, having a metal gas barrier with metal flow fields, and a polymer cell frame serving as gasket.
  - 1.5. Document D5 discloses (see passages cited in the search report) stainless steel bipolar plates, which are fusion welded together on the edge with a glass or ceramic gasket.

**2. *Novelty and inventive step:***

- 2.1. Document D1, which is considered to represent the most relevant state of the art, discloses (cf. 1.1.) a fuel cell separator from which the subject-matter of claim 1 differs in that the separator has openings at the peripheral edge portion and is further adhesion

treated with a film member at said peripheral edge portion.

- 2.2. The subject-matter of claim 1 is therefore novel (Article 33(2) PCT).
- 2.3. The problem to be solved by the present invention may be regarded as providing a separator with good adhesion between a film and a substrate, which has excellent corrosion resistance particularly at the open portion for forming the manifold, and avoiding leakage.
- 2.4. The solution to this problem proposed in claim of the present application is considered as involving an inventive step (Article 33(3) PCT), since all the cited documents refer to other stack design, not considering the problem.
- 2.5. Claims 2 to 6 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.
- 2.6. The manufacturing method of claims 7 and 8, the fuel cell of claim 9 and the vehicle of claim 10 are considered as meeting the requirements of the PCT with respect to novelty and inventive step, since they refer to the separator of claim 1.

**Re Item VII**

**Certain defects in the international application**

The equivalent value given in unit kgf/cm<sup>2</sup> should have been added in the S.I. unit MPa on page 4 and 13 of the description.